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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,019	12/20/2001	Ralph H. Johnson	15436.436.3	6105

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EXAMINER

NGUYEN, DUNG T

ART UNIT PAPER NUMBER

2828

DATE MAILED: 08/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,019

Applicant(s)

JOHNSON, RALPH H.

Examiner

Dung (Michael) T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5-7,9,14-16,18,21-30 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21,23,28-30,33 is/are allowed.
- 6) ☒ Claim(s) 2,3,5-7,9,15,16,18,22,24,27,32 and 34 is/are rejected.
- 7) ☒ Claim(s) 14,25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 2-3, 5-7, 9, 14-16, 18, 21-30, and 32-34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 22 is objected to because of the following informalities: the claim depends on the canceled claim 19. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 2-3, 5-7, 9, 15-16, 18, 22, 24, 27, 32, and 34 rejected under 35 U.S.C. 102(e) as being anticipated by Ha et al. (2006/0039432).

With respect to claims 24 and 32, Fig.2-3 show a vertical cavity surface emitting laser (VCSEL), comprising: an active region 46 further comprising at least one quantum well comprised of InGaAsN (GaInNAs) and including GaAsN (GaNAs) barrier layers sandwiching said at least one quantum well and AlGaAs confinement (cladding) layers (48, 54) (as evidenced in Cao (US6465961), col.4, lines 51-52 and claim 20 state that cladding layers are used for

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confining electron movement within the chip and therefore the cladding layers of Ha et al. are also considered confinement layers) sandwiching said active region. (Please note that the inherency to support the quantum well having a depth of at least 40 meV is the figure 14.3 of the book of Electronics Material Science: For Integrated Circuits in Si and GaAs by James W. Mayer and S.S. Lau).

With respect to claim 34, Fig.3 shows a vertical cavity surface emitting laser (VCSEL), comprising: an active region 46 further comprising at least one quantum well and including barrier layers sandwiching said at least one quantum well, at least one of the quantum well and the barrier layers including nitrogen, upper and lower confinement layers (48, 54) (as evidenced in Cao (US6465961), col.4, lines 51-52 and claim 20 state that cladding layers are used for confining electron movement within the chip and therefore the cladding layers of Ha et al. are also considered confinement layers) sandwiching said active region, wherein the barrier layers are comprised of material that reduces a level of non-confining valence band discontinuity in the quantum well due to the presence of nitrogen in the quantum well (it is inherent that since the quantum well contains nitrogen, the barrier layers must comprise a material that reduces a level of non-confining valence band discontinuity); and a flattening layer 50 interposed between the lower confinement layer 54 and the at least one quantum well.

With respect to claims 2 and 15, Fig.3 discloses the GaAsN barriers.

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With respect to claims 3, 9, 16, 18, and 22, Fig.3 discloses AlGaAs the confinement layers (48, 54) (see the rejection of claims 24 and 32).

With respect to claim 5, para.0033 discloses the well comprises Nitrogen more than 1%.

With respect to claims 6-7 and 27, Fig.3 discloses the quantum well includes up to 62 angstroms in thickness.

Allowable Subject Matter

Claims 14 and 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 21, 23, 28-30, and 33 are allowed because Ha et al. fail to disclose the limitations of AlGaAs barrier layers, InGaAs barrier layers, and GaAsN confinement layers.

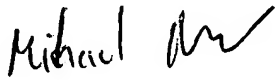
Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

A handwritten signature in black ink, appearing to read "Michael" followed by a stylized flourish.

Michael Dung Nguyen

7/31/06